

The applicant wishes to thank the Examiner in charge of this application for the courtesy and cooperation he extended applicant's undersigned counsel during the telephone interview kindly granted on October 12, 2007.

Prior to this interview, on October 10, 2007, applicant's counsel transmitted to the Examiner a drawing, a copy of which is attached to this Response as Appendix A, with a cross-sectional view of interlocking half ring elements as shown in applicant's Fig. 8, and a corresponding cross-sectional view in the U.S. Patent No. 4,690,580 to Kissel. During the interview, applicant's counsel explained that when the half ring elements of Kissel are moved from an opened to a closed position, they must be accurately aligned so that the convex end portion 7 of one element slips into the concave opening 6 of the other element. Any misalignment of the ring elements will result in a failure of the two elements to "nest".

With the present invention, because the "nose" 150 of one half ring element is smaller than the opening 156' in the other half ring element, the two elements can be quite misaligned and yet will easily engage. The nose 150 will enter the relatively large opening 156', and thereafter contact between the respective angled portions 151 and 153 will cause the nose to centrally locate and "self-align".

This is because the two angled portions do not engage fully face-to-face, but engage only along a contact line, indicated manually as line 155 in Fig. 8.

In response, the Examiner contended that the applicant's cross-sectional rendering of Kissel was inaccurate. Applicant's counsel agreed that the drawing was not to scale, but noted the essential principle of Kissel; namely, that when the convex cylinder 7 is inserted into a concave cylinder 6, little "self-alignment" is possible.

In response to the Examiner's request for a more accurate drawing, applicant submits Appendices B and C. Appendix B again repeats the cross-section in applicant's Fig. 8; Appendix C reproduces Figs. 4 and 5 of Kissel in enlarged form and illustrates the two interlocking half ring elements in cross-sectional view, as closely to scale as possible. In this view, the gap between the cylindrical convex portion 7 and the cylindrical concave portion 6 has been made slightly wider than that shown in Appendix A. However, the principle remains the same: a protruding cylindrical end portion of one half ring element is inserted into a hollow cylindrical end portion of the other half ring element, requiring that the protruding portion be in accurate alignment and registration with the concave portion for the two half ring elements to "nest".

In Kissel, the tapered surface of the chamfer 9 at the cylindrical opening 6 has an angle of about 45 degrees as does the tapered surface 10 at the end of the cylindrical pin 7. Thus the tapered surface 9 and the tapered surface 10 engage each other face-to-face when the cylindrical regions 6 and 7 nest together (see column 2, lines 41-59).

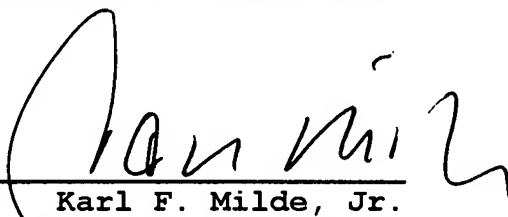
Applicant's claim 1, which delineates the structure illustrated in cross-section in Appendix B, allows for substantial misalignment of the ring elements when their ends are brought into engagement, and "self-aligns" the half ring elements during closing due to the line contact 155 of the two tapered surfaces.

Accordingly, applicant's claim 1, the only independent claim in this application, is believed to distinguish patentably over Kissel. The U.S. Patent No. 6,217,247 to Ng and applicant's own prior Patent Publication No. 2003/004221, which were cited in combination with Kissel, also fail to teach or suggest the structure illustrated in applicant's Fig. 8 (Appendix B). In particular, none of the references illustrates a conical convex portion at the end of one half ring element having an "annular conical surface" which mates with a "conical hole" in the concave nesting portion at the end of the opposing half ring element, wherein "a cone angle of said conical hole is smaller than that of the annular

conical surface" of the convex end of the other half ring element, so that the two surfaces meet only along a line 155, as shown in Appendix B. This structure causes the half ring elements to "self-align".

This application is therefore believed to be in condition for immediate allowance. A formal Notice of Allowance is accordingly respectfully solicited.

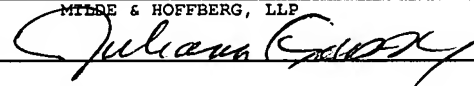
Respectfully submitted,

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MILDE & HOFFBERG, LLP  
By   
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